National Institute of Environmental Health Sciences

The urban heat island Mitigation Impact Screening Tool (MIST)

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Abstract:

A web-based software tool has been developed to assist urban planners and air quality management officials in assessing the potential of urban heat island mitigation strategies to affect the urban climate, air quality, and energy consumption within their cities. The user of the tool can select from over 170 US cities for which to conduct the analysis, and can specify city-wide changes in surface reflectivity and/or vegetative cover. The Mitigation Impact Screening Tool (MIST) then extrapolates results from a suite of simulations for 20 cities to estimate air temperature changes associated with the specified changes in surface characteristics for the selected city. Alternatively the user can simply define a nominal air temperature reduction that they hope to achieve with an unspecified mitigation scenario. These air temperature changes are then input to energy and ozone models to estimate the impact that the mitigation action may have on the selected city. The results presented by MIST include a high degree of uncertainty and are intended only as a first-order estimate that urban planners can use to assess the viability of heat island mitigation strategies for their cities. As appropriate, MIST analyses should be supplemented by more detailed modeling.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Temperature

Air Pollution: Ozone

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Computing System, Methodology

Resource Type:

format or standard characteristic of resource

Research Article, Research Article

Timescale:

time period studied

Time Scale Unspecified